



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/722,774	11/27/2000	David Erb	777.386US1	4894

27488 7590 07/25/2003

MERCHANT & GOULD  
P.O. BOX 2903  
MINNEAPOLIS, MN 55402-0903

EXAMINER

SHRADER, LAWRENCE J

ART UNIT	PAPER NUMBER
----------	--------------

2124

DATE MAILED: 07/25/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/722,774

Applicant(s)

ERB ET AL.

Examiner

Lawrence Shrader

Art Unit

2124

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 November 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-15, 17-24, 26 and 27 is/are rejected.
- 7) ☒ Claim(s) 7, 16, 25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 10, and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Ito, U.S. Patent 6,532,333.

**In regard to claim 1,** Ito discloses a method of compressing data:

*“Determining difference information as a function of the data to be compressed;”*

Difference information used for compressing (encoding) the data (column 1, line 50 – column 2, line 6).

*“Responding to the difference information ...encoding the difference information...for a type of data to be compressed.”* Reference to a set of difference values based on type of the data (column 5, lines 15 – 22).

**In regard to claim 10:**

Claim 10 (a computer readable medium) is rejected for the corresponding reasons put forth in the rejection of claim 1 (a method).

**In regard to claim 19:**

Claim 19 (a computer arrangement) is rejected for the corresponding reasons put forth in the rejection of claim 1 (a method).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2, 11, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito, U.S. Patent 6,532,333 in view of Perkins et al., U.S. Patent 5,828,414 (hereinafter referred to as Perkins).

**In regard to claim 2, incorporating the rejection of claim 1 above:**

*“...before determining the difference information, storing an initial counter value...”* Ito does not teach the storing of a counter value before determining difference information. However, Perkins does teach storing a counter value before completing a difference computation (column 6, lines 59 – 67). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the compression function based on difference information as taught by Ito with the storage of counter information before calculating the difference information as taught by Perkins because storing counter information before the difference calculation allowing that control information to be decoded and implemented in the processing of a signal without other reference information.

**In regard to claim 11**, incorporating the rejection of claim 10 above:

Claim 11 (a computer readable medium) is rejected for the corresponding reasons put forth in the rejection of claim 2 (a method).

**In regard to claim 20**, incorporating the rejection of claim 19 above:

Claim 20 (a computer arrangement) is rejected for the corresponding reasons put forth in the rejection of claim 2 (a method).

5. Claims 3, 4, 12, 13, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito, U.S. Patent 6,532,333 in view of Masters, U.S. Patent 5,212,772.

**In regard to claim 3**, incorporating the rejection of claim 1 above:

*“accumulating the encoded difference information in a buffer ...; and*

*“storing the contents of the buffer in a profiling data file in response to the buffer accumulating to a predetermined amount of difference information.”* Ito does not teach accumulating difference information in a buffer, nor storing it in a file when a predetermined amount of data is received. However, Masters does teach accumulating difference information in a buffer, and storing the contents in a file upon receiving a predetermined amount of information (column 4, lines 35 – 66). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the compression function based on difference information as taught by Ito with accumulating and storing of difference information in a buffer as taught by Masters because of the efficiency gained by buffering data and then writing only when the buffer is full rather than making write calls whenever any data is available.

**In regard to claim 4, incorporating the rejection of claim 3:**

*“before storing the contents of the buffer...compressing the contents of the buffer.”* Ito does not teach compression of buffer data. However, Masters compresses the buffer data before writing it to the file (e.g., Figure 2, column 4, lines 36 – 40). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the compression function based on difference information as taught by Ito with accumulating and storing of compressed difference information in a buffer as taught by Masters because of the efficiency gained by either reducing the buffer size or by increasing the amount of data to be stored in the buffer space and consequently writing a larger block of data to the file and reducing the number of write cycles.

**In regard to claim 12, incorporating the rejection of claim 10 above:**

Claim 12 (a computer readable medium) is rejected for the corresponding reasons put forth in the rejection of claim 3 (a method).

**In regard to claim 13, incorporating the rejection of claim 12:**

Claim 13 (a computer readable medium) is rejected for the corresponding reasons put forth in the rejection of claim 4 (a method).

**In regard to claim 21, incorporating the rejection of claim 19 above:**

Claim 21 (a computer arrangement) is rejected for the corresponding reasons put forth in the rejection of claim 3 (a method).

Art Unit: 2124

**In regard to claim 22**, incorporating the rejection of claim 21:

Claim 22 (a computer arrangement) is rejected for the corresponding reasons put forth in the rejection of claim 4 (a method).

6. Claims 5, 14, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito, U.S. Patent 6,532,333 in view of Bodnar et al., U.S. Patent 6,295,541.

**In regard to claim 5**, incorporating the rejection of claim 1 above:

*"...the difference information is timestamp difference information...with reference to a set of commonly occurring timestamp difference values."* Ito teaches the use of timestamp information, but does not encode difference information based on a timestamp. However, Bodnar teaches the comparison of timestamp information with reference to a range (commonly occurring) of timestamp information (column 28, lines 46 – 67). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the compression function based on difference information as taught by Ito with the use of timestamp information as taught by Bodnar because the timestamp information could be used for synchronization or other timing functions in the system.

**In regard to claim 14**, incorporating the rejection of claim 10 above:

Claim 14 (a computer readable medium) is rejected for the corresponding reasons put forth in the rejection of claim 5 (a method).

**In regard to claim 23**, incorporating the rejection of claim 19 above:

Claim 23 (a computer arrangement) is rejected for the corresponding reasons put forth in the rejection of claim 5 (a method).

7. Claims 6, 15, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito, U.S. Patent 6,532,333 in view of Faillace, U.S. Patent Re. 31,903

**In regard to claim 6, incorporating the rejection of claim 1 above:**

*“Encoding the difference information...with reference to a set of commonly occurring stack difference values,”* Ito does not teach use of a stack for difference values. However, Faillace teaches a stack for storing the absolute value of difference information (column 10, line 56 to column 11, line 8). Storing data in a stack is well known in the art for its last in first out capability, and could be useful in the synchronization of encoding/decoding functions.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the compression function based on difference information as taught by Ito with the use of difference information in a stack as taught by Faillace because the last in first out feature of a stack allows the difference data to be correlated with other corresponding information in the system.

*“Reconstructing a sign of the stack difference...”* Ito does not teach the reconstruction of a sign of stack differences. However, Faillace teaches a stack for storing the absolute value of difference information and means to reconstruct the sign (column 11, lines 3 – 8). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the compression function based on difference information as taught by Ito with the use of stacks and the reconstruction of a sign as taught by Faillace because the difference information of control data in the Ito invention would then have a means to recover any necessary signed information relevant to the compressed data.



**In regard to claim 15, incorporating the rejection of claim 10 above:**

Claim 15 (a computer readable medium) is rejected for the corresponding reasons put forth in the rejection of claim 6 (a method).

**In regard to claim 24, incorporating the rejection of claim 19 above:**

Claim 24 (a computer arrangement) is rejected for the corresponding reasons put forth in the rejection of claim 6 (a method).

8. Claims 8, 17, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito, U.S. Patent 6,532,333 in view of Faillace, U.S. Patent Re. 31,903, and further in view of Maxwell, U.S. Patent 6,106,571.

**In regard to claim 8, incorporating the rejection of claim 1:**

*"...if the data to be compressed represents stack information collected upon entry to and exit from a function, recording a single difference value for the stack information."* Ito teaches the implementation of a compression function based on difference information, but neither Ito nor Faillace teaches the use of a stack for difference values collected from entry from and exit from a function. However, Maxwell teaches difference information collected from entry from and exit from a function (column 3, lines 53 – 67). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the compression function based on difference information as taught by Ito with the use of difference information in a stack as taught by Faillace, further modified by the collection of difference information upon entry to and exit from a function enabling the invention of Ito to process time stamp data for the purpose of

Art Unit: 2124

collecting information about the time spent calculating a function and evaluating the efficiency of the function.

**In regard to claim 17**, incorporating the rejection of claim 10 above:

Claim 17 (a computer readable medium) is rejected for the corresponding reasons put forth in the rejection of claim 8 (a method).

**In regard to claim 26**, incorporating the rejection of claim 19 above:

Claim 26 (a computer arrangement) is rejected for the corresponding reasons put forth in the rejection of claim 8 (a method).

9. Claims 9, 18, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maxwell, U.S. Patent 6,106,571 in view of Faillace, U.S. Patent Re. 31,903, further in view of Bodnar et al., U.S. Patent 6,295,541, and further in view of Ito, U.S. Patent 6,532,333.

**In regard to claim 9**, Maxwell discloses a means to process profiling data:

*"Collecting the profiling data;"* Maxwell collects time stamp information with tags (probes) to be used as a performance statistic the profiling report (column 3, lines 53 – 67).

*"Determining the difference information as a function of the collected profiling data;"* Maxwell determines difference information based on profiling data (time stamp information) to calculate execution time (column 3, lines 57 – 61).

*"If the profiling data is time stamp data..."* Maxwell does not teach encoding the difference information. However, Ito teaches the use of timestamp information in the compression function based on difference information (column 1, line 50 – column 2, line 6), and Bodnar teaches the comparison of timestamp information with reference to a range

(commonly occurring) of timestamp information (column 28, lines 46 – 67). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the compression function based on difference information as taught by Ito modified by Maxwell to enable the processing of time stamp difference information, and further modified by Bodnar to reference the time stamp information to commonly occurring time stamp values, because the timestamp difference information could be used for synchronization or performance monitoring functions in the system.

*“If the profiling data is stack data,*

*“encoding the difference information as an unsigned quantity...”* Maxwell does not teach the use of a stack or encoding the difference information. However, Ito teaches the use a compression function based on difference information (column 1, line 50 – column 2, line 6), and Faillace teaches a stack for storing the absolute value of difference information (column 10, line 56 to column 11, line 8). Storing data in a stack is well known in the art for its last in first out capability, and could be useful in the synchronization of encoding/decoding functions.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the compression function based on difference information as taught by Ito with the use of difference information as taught by Maxwell, and further modified by Faillace implementing difference information in a stack, because the last in first out feature of a stack allows the difference data to be correlated with other corresponding information in the system.

*“reconstructing the sign of the stack differences...”* Maxwell does not teach the reconstruction of a sign of stack differences. However, Faillace implements a stack for storing the absolute value of difference information and means to reconstruct the sign (column 11, lines

Art Unit: 2124

3 – 8). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine difference information of the profiling data as taught by Maxwell with the use of stacks and the reconstruction of a sign as taught by Faillace because the difference information of profile data could then be matched with any necessary sign information relevant to the data.

**In regard to claim 18, incorporating the rejection of claim 10 above:**

Claim 18 (a computer readable medium) is rejected for the corresponding reasons put forth in the rejection of claim 9 (a method).

**In regard to claim 27, incorporating the rejection of claim 19 above:**

Claim 27 (a computer arrangement) is rejected for the corresponding reasons put forth in the rejection of claim 9 (a method).

***Allowable Subject Matter***

10. Claims 7, 16, and 25 are allowed.

**In regard to claim 7:**

*“...dividing a quantity represented by the difference information by four before encoding...”* Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The cited prior art taken alone or in combination fail to teach dividing a quantity represented by the difference information by four before encoding.

**In regard to claim 16:**

Art Unit: 2124

Claim 16 (a computer readable medium) is allowed for the corresponding reasons put forth in the allowance of claim 7 (a method).

**In regard to claim 25:**

Claim 25 (a computer arrangement) is allowed for the corresponding reasons put forth in the allowance of claim 7 (a method).

***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Re. 36,633 (U.S. Patent 5,260,978) to Fleischer et al., regarding time stamp for timing recovery.

U.S. Patent 6,119,213 to Robbins, regarding memory addressing using time stamp data in synchronizing a coding/decoding mechanism.

U.S. Patent 6,563,875 to Auvray et al., regarding coding and decoding images.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Shrader whose telephone number is (703) 305-8046. The examiner can normally be reached on M-F 08:00-16:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (703) 305-9662. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Art Unit: 2124

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Lawrence Shrader  
Examiner  
Art Unit 2124

July 2, 2003

*Kakali Chaki*  
KAKALI CHAKI  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100